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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BOR, HELENE CATHERINE

ART UNIT

PAPER NUMBER

3768

MAIL DATE

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10/09/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/563,086	Applicant(s) TAMANO ET AL.	
	Examiner Helene Bor	Art Unit 3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07/13/2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The examiner recognizes the amendments, filed 07/13/2007, with regards to claims 1, 2, 4, 6 and 11. Also that claims 3 and 5 have been canceled and claim 14 is new. Thus under examination are the original, amended and new claims 1-2, 4, 6-14.

Response to Arguments

1. Applicant's corrections to the drawings have been accepted and all objections in regards to the drawings are withdrawn.
2. Applicant's corrections to the specification have been accepted and all objections in regards to the specification are withdrawn.
3. Applicant's corrections in regards to the oath/declaration overcomes the objection and all objections to the oath/declaration are withdrawn.
4. Applicant's corrections to claim 6 in regards to the 112, second paragraph rejection overcomes the rejection and the examiner withdraws the 112 second paragraph rejection for claim 6.
5. Applicant's arguments filed 07/13/2007 have been fully considered but they are not persuasive. Applicant presents the argument that the Hossack'248 does not teach change over switch disposed in the handle section of the probe. Applicant also asked that the examiner to point out the language within Hossack'248 that explains such a feature of the invention. The examiner presented evidence in the Office Action dated 04/10/2007 on page 6 that explain how Hossock'248 drawings, which is a part of a disclosure, equates to the features of the applicant's claimed invention. Hossack'248 teaches a system controller [connection change over switch] (Figure 4, "system

controller”) in the handle section. When looking at the relationship Figure 1 has with Figure 4, the system controller would be located in the “to handle” section of Figure 1. However, the amendments to the claims force the examiner to adjust the rejection in light of the submitted amendments.

Specification

6. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The claimed subject matter of consecutive ID numbers is not disclosed in the specification although evidence of the subject matter is supported in Figure .

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Hossack'248 et al. (US Patent No. 6,171,248 B1).

Claim 1: Hossack'248 teaches an ultrasonic probe, which includes an insert section (Figure 1, Element 10) to in body cavity (Col. 1, Line 52) and a handle section (Figure 1, Element “to handle”). Hossack'248 teaches a plurality of ultrasonic transducer elements [vibrator elements] (Col. 4, Line 14-15) at the tip of the insert section around entire 360 degree outer circumference (Figure 1 & Col. 4, Line 32-35). Hossack'248 teaches a system controller [connection change over switch] is constituted in such a manner that the respective plurality of the vibrator elements (Figure 4, “system controller”) in the handle section. When looking at the relationship Figure 1 has with

Figure 4, the system controller would be located in the "to handle" section of Figure 1.

The system controller provides input to the beamformer (Figure 1, Element 102).

Hossack'248 teaches transmit-receive elements combinations from the beamformer, which includes both transmit and receive (Col. 5, Line 62-63). Hossack'248 teaches the connection change over switch [Figure 4, "system controller"] successively changes over electrical connection of a predetermined number of vibrator elements among the plurality of vibrator elements to be connected with a predetermined number of ultrasonic wave transmission and reception channels for transmitting and receiving ultrasonic wave signals in an ultrasonic diagnostic apparatus main body (Col. 5, Line 50 – Col. 6, Line 32).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claim 2-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hossack'248 (US Patent No. 6,171,248) and in further view of O'Donnell'892 (US Patent No. 5,291,892).

Claim 2: Hossack'248 teaches an ultrasonic probe, which includes an insert section (Figure 1, Element 10) to in body cavity (Col. 1, Line 52) and a handle section (Figure 1, Element "to handle"). Hossack'248 teaches a plurality of ultrasonic transducer elements [vibrator elements] (Col. 4, Line 14-15) at the tip of the insert section around entire 360 degree outer circumference (Figure 1 & Col. 4, Line 32-35). Hossack'248 teaches a system controller [connection change over switch] is constituted in such a manner that the respective plurality of the vibrator elements (Figure 4, "system controller") in the handle section. When looking at the relationship Figure 1 has with Figure 4, the system controller would be located in the "to handle" section of Figure 1. The system controller provides input to the beamformer (Figure 1, Element 102). Hossack'248 teaches transmit-receive elements combinations from the beamformer, which includes both transmit and receive (Col. 5, Line 62-63). Hossack'248 teaches the connection change over switch [Figure 4, "system controller"] successively changes over electrical connection of a predetermined number of vibrator elements among the plurality of vibrator elements to be connected with a predetermined number of ultrasonic wave transmission and reception channels for transmitting and receiving ultrasonic wave signals in an ultrasonic diagnostic apparatus main body (Col. 5, Line 50 – Col. 6, Line 32). Hossack'248 teaches using the ultrasonic transmission and reception signals for computing ultrasonic images (Figure 4). Hossack'248 teaches an ultrasonic wave

image computing circuit (Figure 4, Element 138, 140, 142, 136, 149 & 146) in the ultrasonic diagnostic apparatus main body (Figure 4). Hossack'248 does not use the words "blood flow image" and "tomogram." However, Hossack'248 does teach an apparatus capable of collecting motion/tracking information [such as blood flow]. In addition, Hossack'248 does teach an apparatus for collecting multiple two-dimensional image data to form a three-dimensional volume [tomography] (Col. 5, Line 11-16 & Line 19-23). Hossack'248 teaches an apparatus a beamformer system/signal detector [connection change over switch] controls the transmission and reception channels with the transducers [vibrators] (Col. 5, Line 63 – Col. 6, Line 5). Hossack'248 also teaches the turning ON and OFF of the transducers [vibrators] (Col. 5, Line 58-63). While Hossack'248 describes waiting for all the signals to be received and the data are delayed and summed to produce a beamformed signal, Hossack'248 does not go into detail regarding the time delays. However, O'Donnell'892 goes into further detail regarding the time delay (Col. 5, Line 39-60) and reference to the center for receiving (Figure 10, Element R & 38). The respective times of the time delay being determined by the beamformer system/signal detector. It would have been obvious to one of ordinary skill in the art to combine the teachings of Hossack'248 and O'Donnell'892 in order to indicate total flow velocity in the two-dimensional plane of the image and the direction of that flow (Col. 4, Line 35-33).

Claim 4/3/2: Hossack'248 teaches the time delay and channels are set unchanged (Col. 5, Line 58 – Col. 6, Line 12). In addition, Hossack'248 teaches the time delay and channels are set changeable at respective times (Col. 6, Line 12-33).

Claim 6/2: Hossack'248 teaches an ultrasonic diagnostic apparatus wherein the transducers [vibrators] cover about 90 degrees over the outer circumferential face at the tip of the insert section (Figure 10, Element 502).

Claim 7/2: Hossack'248 teaches an apparatus allows for view select or image selection circuit (Figure 4, "view select" & Col. 6, Line 45-47).

Claim 8/2: Hossack'248 teaches an apparatus that can adjust according to the depth of penetration (Col. 9, Line 20-31 & Line 54-62).

Claim 9/2: Hossack'248 teaches an apparatus includes an image display unit (Figure 6, Element 146). Hossack'248 does not use the words "blood flow image" and "tomogram." However, Hossack'248 does teach an apparatus capable of collecting motion/tracking information [such as blood flow]. In addition, Hossack'248 does teach an apparatus for collecting multiple two-dimensional image data to form a three-dimensional volume [tomography] (Col. 5, Line 11-16 & Line 19-23). Hossack'248 also teaches an apparatus capable of displaying the outputs from the computing circuits (Col. 6, Line 38-47).

Claim 10/4/3/2: Hossack'248 teaches sequential mode [the turning on and off of vibrators in a sequence] for the transmit-receive elements of the ultrasound system.

Claim 11/5/3/2: Hossack'248 teaches sequential mode [the turning on and off of vibrators in a sequence] for the transmit-receive elements of the ultrasound system.

Claim 12/10/4/3/2: Hossack'248 teaches an apparatus wherein the beamformer system/signal detector [connection change over switch] shifts the scanning direction by

the ultrasonic wave signals over the entire 360 degree circumference (Col. 5, Line 50-Col. 6, Line 12, Col. 6, Line 33-38 & Col. 8, Line 11-12).

Claim 13/11/5/3/2: Hossack'248 teaches an apparatus wherein the beamformer system/signal detector [connection change over switch] shifts the scanning direction by the ultrasonic wave signals over the entire 360 degree circumference (Col. 5, Line 50-Col. 6, Line 12, Col. 6, Line 33-38 & Col. 8, Line 11-12).

Claim 14/2: Hossack'248 teaches wherein each of the each of the plurality of vibrator elements is assigned a consecutive ID number (Col. 3, Line 52-54).

Hossack'248 teaches the connection change over switch connects a first vibrator element having the lowest ID number and a second vibrator element having the highest ID number to respective corresponding ultrasonic wave transmission (Claim 1).

Hossack'248 does not go into detail regarding the time delays. However, O'Donnell'892 goes into further detail regarding the time delay (Col. 5, Line 39-60) and reference to the center for receiving (Figure 10, Element R & 38). The respective times of the time delay being determined by the beamformer system/signal detector. It would have been obvious to one of ordinary skill in the art to combine the teachings of Hossack'248 and O'Donnell'892 in order to indicate total flow velocity in the two-dimensional plane of the image and the direction of that flow (Col. 4, Line 35-33).

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helene Bor whose telephone number is 571-272-2947. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on 571-272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3768

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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